

## ABSTRACT OF THE DISCLOSURE

A method for performing end-to-end "tree-based ordered multicasting" (TOM) which ensures collective integrity and consistency of distributed operations, and which is applicable to distributed multiparty collaboration and other multipoint applications.

- 5 The TOM protocol performs cascaded total ordering of messages among on-tree hosts *en route* from senders to receivers, and does not require the building of a separate propagation graph to compute ordering information. TOM elects sequencer nodes dynamically based on address extensions of the multicast tree. Message ordering is performed by multicasting a message from each source node to receivers, unicasting a control message from a source node across a primary node to an ordering node for the designated multicast group or transmission in the tree, determining a binding sequence number for the message and a multicast to the receiver group, and delivering messages at end hosts according to the agreed-upon sequence numbers.

TOO SECRET